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I CLAIM:

1. A method of label selection for end-to-end transport of label switched traffic through a communications network between a source node and a destination node, the method comprising the steps of:
 - a) launching a request message toward the destination node from the source node, the request message including a label list having one or more label identifiers indicative of respective corresponding labels available for use by the source node; and
 - b) revising the label list at each successive hop between the source node and the destination node, based on labels available for use by each respective hop, to produce a reduced label list;

whereby the reduced label list includes any label identifiers indicative of respective corresponding labels available for end-to-end transport of label switched traffic between the source node and the destination node.
2. A method as claimed in claim 1, wherein the communications network is adapted for wave division multiplex (WDM) transport of label switched traffic, each label comprising a respective data transport wavelength.
3. A method as claimed in claim 1, wherein the label switched traffic includes multi-protocol label switched (MPLS) traffic.

4. A method as claimed in claim 1, wherein the step of revising the label list comprises, at each successive hop toward the destination node, a step of intersecting the label list with a set of label identifiers indicative of labels available for use over the hop.
5. A method as claimed in claim 4, further comprising, at each successive hop toward the destination node, a step of sending a request rejection message to the source node if the reduced label list is empty.
6. A method as claimed in claim 1, further comprising, if the reduced label list included with the request message received by the destination node contains at least one label identifier, the step of:
 - a) selecting one of the label identifiers from the reduced label list; and
 - b) setting up an end-to-end label switched path between the source node and the destination node using the respective label corresponding to the selected label identifier.
7. A method as claimed in claim 6, wherein the one of the label identifiers is selected at random.
8. A method as claimed in claim 6, wherein the step of setting up an end-to-end label switched path comprises a step of sending a mapping message containing the selected label identifier from the destination node toward the source node, the mapping message retracing the path traversed by the request message.

9. A method as claimed in claim 8, further comprising, upon receipt of the mapping message at each hop, a step of assigning the label to the end-to-end label switched path if the label corresponding to the selected label identifier is still available for use by the hop.
10. A method as claimed in claim 8, further comprising, upon receipt of the mapping message at each hop, a step of sending a mapping failure message to the destination node if the label corresponding to the selected label identifier is not available for use by the hop.
11. A method as claimed in claim 10, further comprising, upon receipt of the mapping failure message by the destination node, the steps of:
 - a) revising the reduced label list by removing the selected label identifier;
 - b) if the reduced label list is empty, sending a request rejection message to the source node; and
 - c) if the reduced label list contains at least one label identifier:
 - i) selecting a new label identifier from the reduced label list; and
 - ii) setting up an end-to-end label switched path between the source node and the destination node using the respective label corresponding to the selected label identifier.

12. A communications network for label selection for end-to-end transport of label switched traffic through the communications network, the communications network comprising:
 - a) a source node adapted to launch a request message toward a destination node, the request message including a label list having one or more label identifiers indicative of respective corresponding labels available for use by the source node; and
 - b) at least one hop intermediate the source node and the destination node, each hop comprising a respective intermediate node adapted to revise the label list based on labels available for use by the respective hop, to produce a reduced label list.
13. A communications network as claimed in claim 12, wherein the communications network is adapted for wave division multiplex (WDM) transport of label switched traffic, each label comprising a respective data transport wavelength.
14. A communications network as claimed in claim 12, wherein the label switched traffic includes multi-protocol label switched (MPLS) traffic.
15. A communications network as claimed in claim 12, wherein each intermediate node is adapted to revise the label list by intersecting the label list with a set of label identifiers indicative of labels available for use over the respective hop.

16. A communications network as claimed in claim 15, wherein each intermediate node is further adapted to send a request rejection message to the source node if the reduced label list is empty.
17. A communications network as claimed in claim 12, wherein, upon receipt of the request message, if the reduced label list contains at least one label identifier, the destination node is adapted to:
 - a) select one of the label identifiers from the reduced label list; and
 - b) set up an end-to-end label switched path between the source node and the destination node using the respective label corresponding to the selected label identifier.
18. A communications network as claimed in claim 17, wherein the destination node is adapted to set up an end-to-end label switched path by sending a mapping message containing the selected label identifier toward the source node, the mapping message retracing the path traversed by the request message.
19. A communications network as claimed in claim 18, wherein each intermediate node is responsive to reception of the mapping message to assign the label corresponding to the selected label identifier to the end-to-end label switched path if the label is still available for use by the respective hop.
20. A communications network as claimed in claim 18, wherein each intermediate node is responsive to reception of the mapping message to send a mapping

failure message to the destination node if the label corresponding to the selected label identifier is not available for use by the respective hop.

21. A communications network as claimed in claim 20, wherein the destination node is responsive to reception of the mapping failure message to:
 - a) revise the reduced label list by removing the selected label identifier;
 - b) if the reduced label list is empty, send a request rejection message to the source node; and
 - c) if the reduced label list contains at least one label identifier:
 - i) select a new label identifier from the reduced label list; and
 - ii) set up an end-to-end label switched path between the source node and the destination node using the respective label corresponding to the selected label identifier.
22. An intermediate node of a communications network adapted for end-to-end transport of label switched traffic through the communications network between a source node and a destination node, the intermediate node comprising:
 - a) a label availability list including label identifiers indicative of labels available for conveying label switched traffic through a respective communications link connected to the intermediate node;

- b) a buffer adapted to receive a request message propagated through the communications network from the source network, the request message including a label list having label identifiers indicative of labels available for conveying label switched traffic between the source node and the intermediate node; and
 - c) a processor adapted to revise the label list included in the received request message, based on the label availability list, to produce a reduced label list.
23. An intermediate node as claimed in claim 22, wherein the processor is adapted to revise the label list by intersecting the label list with the label availability list.
24. An intermediate node as claimed in claim 22, further comprising means for assigning a label to an end-to-end path between the source node and the destination node in response to a mapping message received from the destination node, the mapping message containing a label identifier corresponding to the label.
25. An intermediate node as claimed in claim 22, further comprising means for sending a mapping failure message to the destination node in response to a mapping message received from the destination node containing a label identifier corresponding to a label that is not available for conveying label switched traffic.

26. An intermediate node as claimed in claim 22, further comprising means for sending a request rejection message to the source node if the reduced label list is empty.